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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,230	06/10/2002	Manfred Dilger	225MU/50870	9509

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EXAMINER

PATEL, VISHAL A

ART UNIT PAPER NUMBER

3676

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/049,230

Applicant(s)

DILGER ET AL. *ST*

Examiner

Vishal Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-15,20-23,25-28,30-32,35-38 and 42 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 8-15,20-23,25-28,30-32,35-38 and 42 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 8-15, 20-23, 25-28, 30-32, 35-38 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gail et al (US. 5,752,805) in view of Aksit (US. 6,406,027).

Regarding claims 8 and 31:

Gail disclose brush sealing ring used in a sealing element between components which can move relative to one another, in particular between a rotor and a stator (stator 1 and rotor 2). An element (element that is formed by 5 and 4) which is fixed to the stator, having an annular housing (housing having 5 and 4, fig. 1) and having a multiplicity of bristle (each bristle in bundle B) which are attached within the housing and protrude radially or axially out of the contour of the housing (the bristles project radially or axially out of the contour of the housing) and whose free end faces form tangents with an imaginary, rotationally symmetrical or planar face. The bristles being composed of sections of strands (strands of B) which are present in a wound arrangement, each section individually running in a loop shape (loop shape of B, each bristle in bundle is individually running in a loop shape) around a core (7) extending away from it without crossing over (as seen in figure 1a, the bristle are not crossing over) in such a way that its toe end faces from tangents with the same imaginary face which is spaced apart from the core.

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The sections being arranged around the core in a plurality of layers one on top of the other (as seen in figure 1a) and being secured in a fixed fashion with a clamping section (clamp 8).

The clamping section is prestressed by elastic cross-sectional widening (column 5, lines 61-64, where the clamping is done by clamping section 8, process limitation is given little patentable weight). The sections of the strands are secured between the core and the clamping section exclusively by means of frictional locking which is dependent on an amount the clamping section is prestressed (column 5, lines 61-64).

Regarding claims 9-15 and 32:

The core is shaped from a metal wire (wire 7 of round cross section) with a round cross section and the clamping section is shaped a metallic round tube (column 5, lines 61-64) which is slotted in the longitudinal direction (slotted, since the core is clamped by the clamping section, figure 1). In addition to their essentially, radial or axial orientation, the sections have a directional component in the circumferential directions outside the claiming region (see figure 1). The sections have end faces (each bristle of bundle B has an end face) which are manufactured by mechanical cutting or shearing off, by laser beam cutting, if appropriate with water cooling or by means of water jet cutting (process limitations are given little patentable weight in an apparatus claims).

Regarding claims 20-28, 30 and 35-36:

The sealing ring is configured for sealing predominantly gaseous fluids, including hydrogen, turbo machines and electrical generators (intended use, see column 1, lines 5-10).

Regarding claims 37-38 and 42:

A method of making a sealing ring for sealing a space between a rotor and a stator (rotor 2 and stator 1), comprising:

fixing an annular seal housing (housing having 4 and 5) to the stator (fig. 1);

placing a core (7) in the annular seal housing with a plurality of fiber strand sections (bristles of bundle B) looped around the core (bristles looped around 7) which extend with end faces forming tangents with an annular face spaced from the core to the sealing engage the rotor, and

prestressing a clamp by elastic cross-sectional widening (this is the case when the clip is placed over the core and the bristles);

clamping (clamping by 8) the strand sections to the core;

the strand sections are secured between the clamp and the core exclusively by frictional clamping (column 5, lines 61-64);

the strand sections are secured between the clamp and the core exclusively by fictional clamping which is dependent on an amount the clamp is prestressed (the prestressed put on the clamp)

the rotor and stator are part of a turbo machine (column 1, lines 5-10).

Gail discloses the invention substantially as claimed above but fails to disclose the bristle being made of individual aramid bristle formed of strands having a diameter of less than one-tenth of a millimeter and the bristle is an angel hair aramid filament. Aksit disclose a brush seal having bristle (each bristle 20, column 3, lines 26-27) made of individual aramid bristle filament (Kevlar, column 2, lines 35-37 and has a diameter of less than 0.001 inch and generally of 0.00056in which is less than 1/10 of a millimeter). It would have been obvious to one having

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ordinary skill in the art at the time the invention was made to configure the bristle of Gail to be made from individual aramid bristle filament as taught by Aksit, to provide bristle that has high strength (column 2, lines 28-40 of Aksit).

Response to Arguments

3. Applicant's arguments filed 1/23/04 have been fully considered but they are not persuasive.

Arguments that Gail and Aksit do not teach an individual aramid fiber bristles that have a diameter of less than one-tenth of a millimeter is not persuasive since Gail teaches individual bristle in a bundle B of bristles and Askit is used to teach that each bristle is made by an individual aramid filament that has a diameter of less than one tenth of a millimeter.

Argument that Aksit does not teach individual aramid fibers wound around a core is not persuasive, since Askit is used to teach only that it is well know to used bristle that are made of an individual aramid fiber or filament (see column 3, line 26-27, bristles 20 has a diameter of less than 0.001 inch, meaning each bristle 20 of yarn or fiber 24-30 has a diameter).

The statement that "Applicants do not disagree that it was know to be desirable to have bristles of high strength.", meaning that having aramid bristle is well know in the art. So in conclusion Gail teaches every features of the invention (clamping done by a clamp, a metal core, individual bristles around core that are stacked, holder, stator, rotor and etc.) except for the bristle be made of aramid bristle which is taught by Aksit.

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Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is (703) 308-8495. The examiner can normally be reached on Monday through Friday from 7:30 PM to 4:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight, can be reached on (703) 309-3179.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2168. Technology Center 3600 Customer Service is available at 703-308-1113. General Customer Service numbers are at 800-786-9199 or 703-308-9000. Fax Customer Service is available at 703-872-9325.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to: 703-872-9326, for formal communications for entry before Final action: or,
703-872-9327, for formal communications for entry after Final action.

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Hand-delivered responses should be brought to Crystal Park Five, 2451 Crystal Drive, Arlington, Virginia, Seventh Floor (Receptionist suite adjacent to the elevator lobby).

VP

October 12, 2004



ALISON PICKARD
Primary Patent Examiner
Tech. Center 3600